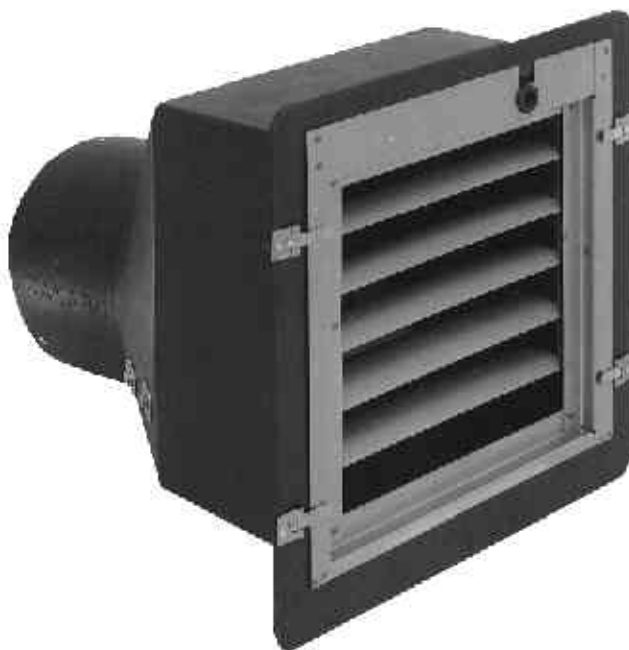




# PLF Series Fans

## Instruction Manual

READ AND SAVE THESE INSTRUCTIONS



### **WARRANTY**

CANARM Ltd. warrants every new fan to be free of defects in material and workmanship, to the extent that, within a period of one year from the date of purchase CANARM Ltd. shall either repair or replace at CANARM's option, any unit or part thereof, returned freight prepaid, and found to be defective.

This warranty does not include any labour or transportation costs incidental to the removal and reinstallation of the unit at the user's premises.

Components repaired or replaced are warranted through the remainder of the original warranty period only.

This warranty applies to the original purchaser-user only; it is null and void in case of alteration, accident, abuse, neglect, and operation not in accordance with instructions.

**NOTICE:** No warranty claims will be honored by CANARM Ltd. unless prior authorization is obtained.

**Installation or Product problems? Do not return to store of purchase.**

**Contact Canarm Service at 1-800-265-1833 (CANADA) 1-800-267-4427 (U.S.A.)**

**1-800-567-2513 (EN FRANCAIS) Monday to Friday 8:00 - 5:00pm e.s.t.**



## **User's Guide for All PLF Series Models**

Congratulations on the purchase of your new High Performance Plastic Fan. This fan is made of materials that ensure long lasting performance and is designed with features that make it one of the most efficient and easy to use and care for fans available today.

Your fan comes completely assembled except for the metal turn clips that can be quickly assembled into the pre-drilled holes around the outside flanges of the fan. All fans are tested for proper operation before leaving the factory. Your fan should be installed into a wood frame. See Chart #1 for dimensions.

**Chart #1**

| Rough Inside Opening Frame Dimension |        |        |       |        |        |       |        |        |
|--------------------------------------|--------|--------|-------|--------|--------|-------|--------|--------|
| Model                                | H      | W      | Model | H      | W      | Model | H      | W      |
| PLF09                                | 15.00" | 15.00" | PLF16 | 19.25" | 19.25" | PLF24 | 27.25" | 27.25" |
| PLF12                                | 15.00" | 15.00" | PLF18 | 21.25" | 21.25" | PLF36 | 40.25" | 40.25" |
| PLF14                                | 17.25" | 17.25" | PLF20 | 23.25" | 23.25" | PLF48 | 52.25" | 52.25" |

### **INSTALLATION**

#### **PLF36 Models**

Remove the fan from the shipping pallet by removing the 6 screws holding the fan to the pallet. A hardware bag is secured to the motor support arm. The hardware bag contains 8 turn clips, 8 nylon washers, 8 10-24 x 3/4" stainless steel screws, and 8 nylon insert nuts. This hardware is for the turn clips that hold the shutter assembly in place.

Assemble the 8 turn clips to the pre-drilled holes. There are 3 holes down each side flange and 1 on each of the top and bottom flanges. For each of the 8 turn clips insert the screw through the hole from the back of the flange, slide on a nylon washer, then the clip, and thread the nut. Tighten the turn clips with a Phillips screw driver and a 3/8" socket wrench. (see Figure 1-b).

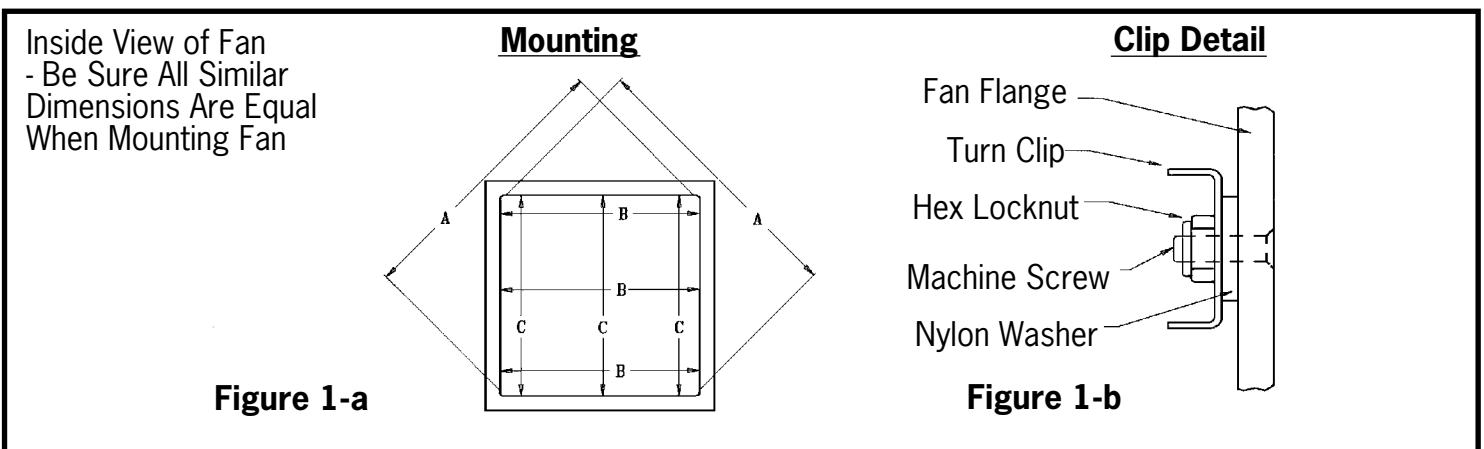
#### **PLF09 to PLF24 Models**

Simply remove the fan from the carton and proceed to next section.

#### **All Fan Models**

With the shutter removed, slide the fan into the framed opening. Push the fan up against the top of the frame to be sure the fan slopes downward for drainage to the outside. Secure the 4 corners with lag bolts. Secure the 4 sides being sure the inside dimensions of the fan are consistent between flanges so that clips and shutters will operate correctly. (see Figure 1-a) This will also ensure that the orifice, is not deformed which may cause the blade to hit the tunnel of the fan.

**Caution: If using expanding foam to insulate, make sure expansion pressure does not damage the housing.**



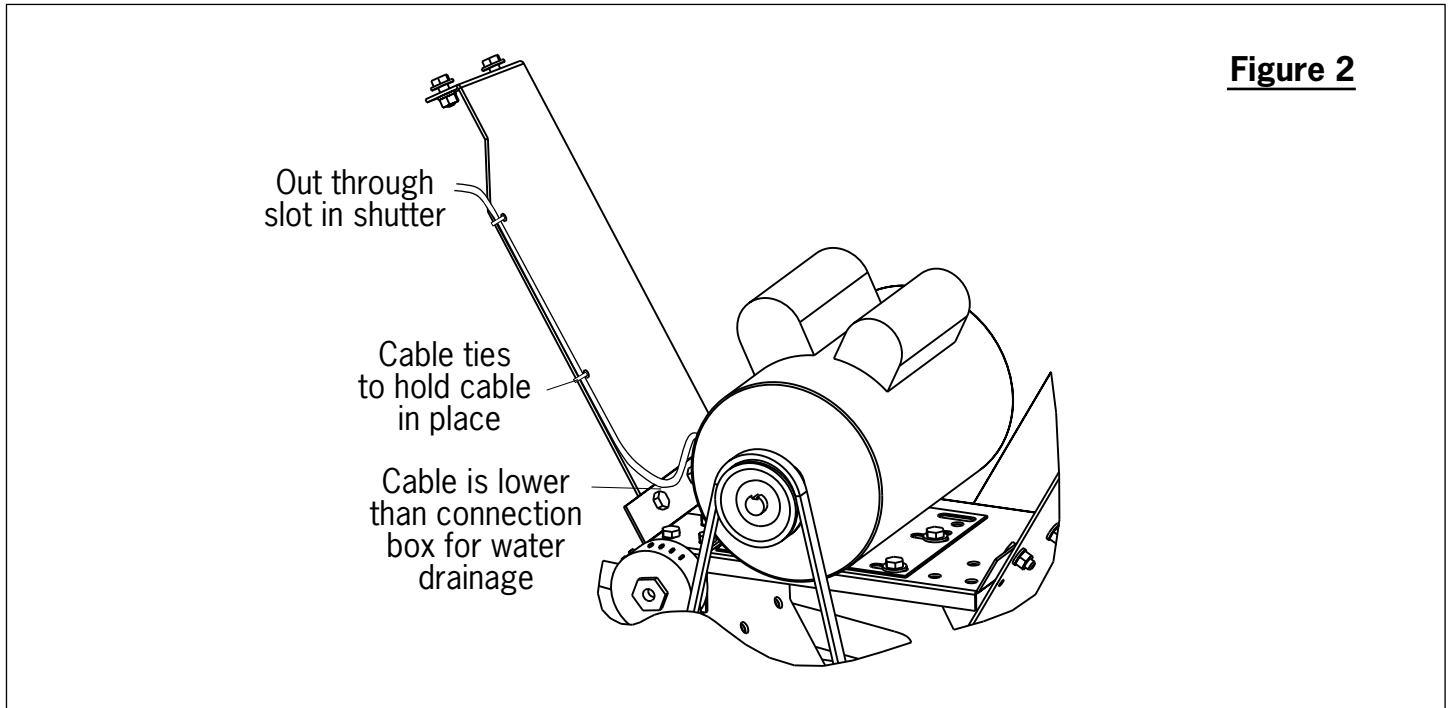
## ELECTRICAL CONNECTIONS

If your fan is not provided with a cord, use the following procedure to wire the fan.



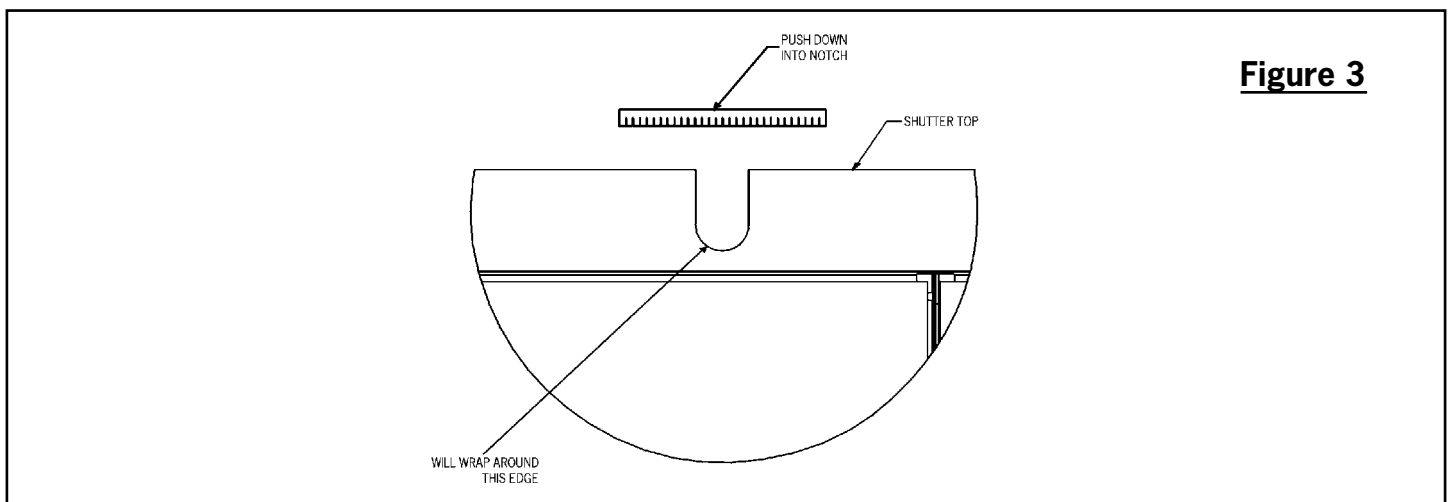
**WARNING: BE SURE POWER IS OFF AT THE ELECTRICAL PANEL BEFORE**

When bringing power to the fan, water-tight cable and connectors should be used. The cable will be brought to the motor through the slot provided in the top of the shutter and allowances in length of cable should be considered. Bring the cable down below the height of the motor then back up to the connector in the side of the motor. This will prevent moisture from running down the cable into the motor. On some models, there are holes punched along the lengths of the arms. It is recommended that you use cable ties provided in hardware bag to attach cable to arm (see Figure 2).



Make sure the cord will not interfere with the blade or louvers. To protect the cable, place the grommetting supplied over the shutter notch edges (see Figure 3). The motors supplied with these fans are dual voltage 120/240V (except for 48" Direct Drive - 240 volt only), but 240V is recommended to reduce power consumption (Note: Fans are factory pre-wired for 240V. Follow motor nameplate directions if 120V is desired).

**Note:** Some fans are available with 3 phase motors. These are not factory pre-wired. Follow Chart #2 for wire sizes. Wiring and motor specification information can be found on the motor nameplate.



## Chart #2

**Table A - Minimum Wire Sizes for Three-Phase Motors**

| Motor<br>HP | 25 to 50 Feet |         |         | 100 Feet |         |         | 150 to 200 Feet |         |         |
|-------------|---------------|---------|---------|----------|---------|---------|-----------------|---------|---------|
|             | 200V          | 230V    | 460V    | 200V     | 230V    | 460V    | 200V            | 230V    | 460V    |
| 1/8         | 14(18)*       | 14(18)* | 14(18)* | 14(18)*  | 14(18)* | 14(18)* | 14(16)*         | 14(16)* | 14(18)* |
| 1/6         | 14(18)*       | 14(18)* | 14(18)* | 14(18)*  | 14(18)* | 14(18)* | 14              | 14(16)* | 14(18)* |
| 1/4         | 14(18)*       | 14(18)* | 14(18)* | 14(16)*  | 14(18)* | 14(18)* | 14              | 14      | 14(18)* |
| 1/3         | 14(18)*       | 14(18)* | 14(18)* | 14(16)*  | 14(16)* | 14(18)* | 12              | 14      | 14(18)* |
| 1/2         | 14(16)*       | 14(18)* | 14(18)* | 12       | 14(16)* | 14(18)* | 10              | 12      | 14(18)* |
| 3/4         | 14(16)*       | 14(16)* | 14(18)* | 12       | 14      | 14(18)* | 10              | 10      | 14(16)* |
| 1           | 14            | 14(16)* | 14(18)* | 12       | 12      | 14(18)* | 8               | 10      | 14(16)* |
| 1-1/2       | 12            | 14      | 14(18)* | 10       | 10      | 14(16)* | 6               | 8       | 14      |
| 2           | 12            | 12      | 14(18)* | 8        | 10      | 14(16)* | 6               | 6       | 12      |
| 3           | 10            | 12      | 14(18)* | 6        | 8       | 14      | 4               | 6       | 12      |

**Table B - Minimum Wire Sizes for Single-Phase Motors**

| Motor<br>HP | 25 to 50 Feet |         |      | 100 Feet |      |         | 150 to 200 Feet |      |      |
|-------------|---------------|---------|------|----------|------|---------|-----------------|------|------|
|             | 200V          | 230V    | 460V | 200V     | 230V | 460V    | 200V            | 230V | 460V |
| 1/8         | 14(18)*       | 14(18)* | 14   | 14(18)*  | 12   | 14(18)* | 10              | 8    | 14   |
| 1/6         | 14(16)*       | 14(18)* | 12   | 14(18)*  | 10   | 14(16)* | 6               | 6    | 12   |
| 1/4         | 14            | 14(18)* | 10   | 14(16)*  | 8    | 14      | 6               | 4    | 10   |
| 1/3         | 14            | 14(18)* | 10   | 14(16)*  | 8    | 14      | 6               | 4    | 10   |
| 1/2         | 12            | 14(18)* | 8    | 14       | 6    | 12      | 4               | 3    | 8    |
| 3/4         | 10            | 14(16)* | 6    | 12       | 4    | 10      | 2               | 1    | 6    |
| 1           | 10            | 14(16)* | 6    | 12       | 4    | 10      | 2               | 1    | 6    |
| 1-1/2       | 8             | 14      | 6    | 12       | 3    | 8       | 1               | 1/0  | 6    |
| 2           | 8             | 14      | 4    | 10       | 2    | 8       | 1/0             | 2/0  | 4    |
| 3           | 6             | 12      | 3    | 8        | 1/0  | 6       | 2/0             | 4/0  | 3    |

**Note:**

- NEC Article 310-5 - \* Minimum conductor size for general wiring at 115-440VAC is number 14AWG.
- Above wire sizes based on approximate 5% voltage drop during starting; copper conductors; and 75C type THHW, THW, THWN, RH, RHW insulation etc. For aluminum wire, increase two wire size steps minimum. See NEC Article 310 for ampacities of aluminum conductors.
- Type S, SO, SJ, SJO, etc flexible cable wire sizes. See NEC Article 400 for ampacity.

## OPERATION

Fans are designed to operate with simple on/off switches, or can be wired into sophisticated controls. Some fan models are designed to run at variable speed while others are single speed only. Varying a single speed fan will cause the motor to fail.

Fan labels should indicate whether or not fan is variable speed. If unsure contact a Canarm representative with the fan model number at our head office.

**WARNING: Variable speed fans should have the minimum speed set to open the fan louvers a minimum of 1" to ensure proper motor cooling and prevent premature motor failure.**

## MAINTENANCE



**WARNING:** Motors are equipped with automatic overload protection and may restart without warning. Always disconnect power before attempting to service.

These fans are used in a variety of applications and therefore maintenance schedules will vary. In general no more than 1/16" of dirt build-up should occur on blade, motor, guard, and louvers for proper fan operation and to prevent premature failure. The complete fan should be washed down on a regular basis to maintain the high efficiency of the fan. Particular care should be taken to clean louvers, fan blades front and back, and front guards for better air moving performance. The motor should be kept clean to prevent overheating and premature failure. As with all mechanical equipment scheduled inspections should include checking that all hardware is secure and blade set screws are tight. We suggest as a minimum, that this be done after every grow out, in livestock applications.

## BELT DRIVE FAN

Belt drive fans are equipped with an automatic belt tensioner and cogged v-belt. The rotary tensioner will compensate for any wear or stretching of the belt. No adjustments should be necessary. Belt will however wear after extensive use. Fan performance will be sacrificed if worn belt is used. Listen for belt “squeeling” on startup. This would indicate that the belt requires changing or tightening. Tightening can be done by moving the screw location on the tensioner bracket. (see figure 3) (Although we recommend replacing the belt).

**Lubrication:** Belt drive fans are provided with bearing blocks that are pre-lubricated & sealed. They have a double contact seal and steel slinger that prevents most contamination. However, since the bearings are to operate in very damp and dirty conditions, re-lubrication is recommended. The grease fitting of the unit should be carefully cleaned before use and the grease should be introduced slowly. Under normal conditions, the bearings only need re-lubrication every 3 years. Nonetheless, we recommend that each bearing receive one pump from a grease gun (or until fresh grease is pushed out), every time the unit is washed down (especially if detergent is used.)

**Note:** Use NLGI2 lithium base grease to ensure compatibility with original grease.

**Caution:** Do not use pneumatic grease guns. Slowly introduce grease with manual gun otherwise bearing seals will be destroyed.



**WARNING: Motors are equipped with automatic overload protection and may restart without warning. Always disconnect power before attempting to service, or removing shutter**

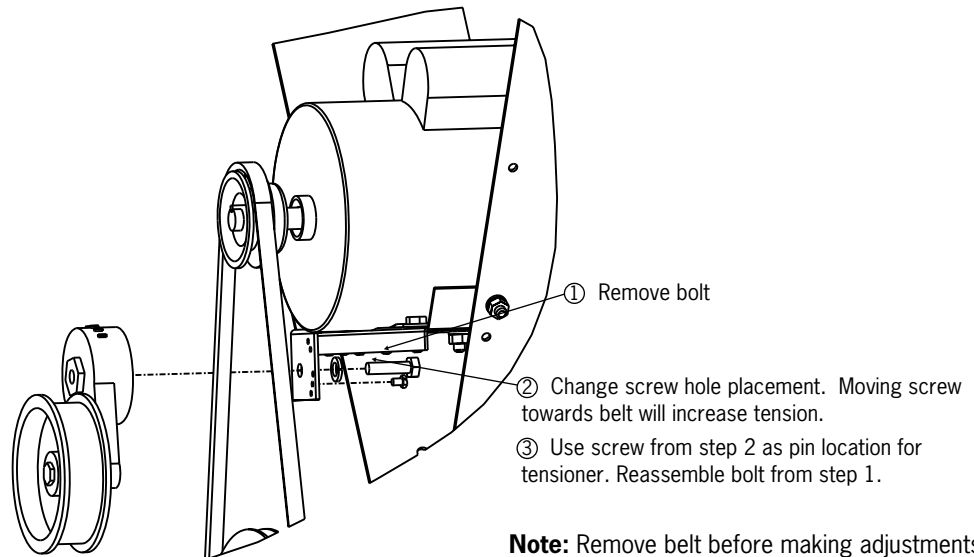
## REPLACEMENT PARTS

See attached appendices for replacement parts.

## ACCESSORIES

Canarm provides a full line of controls from simple on/off thermostats to sophisticated multiple staging controllers and PC based controllers. Winter covers are available for colder climates where the fan is shut down for the winter. Performance enhancing cones are available for 24" to 48" sizes that boosts air moving performance and efficiency by approximately 8% for PLF48, 10% for PLF36 fans, and 15% for PLF24 fans. Weather Hoods are available for 9" to 24" models.

**Figure 3**  
Adjusting Belt Tensioner



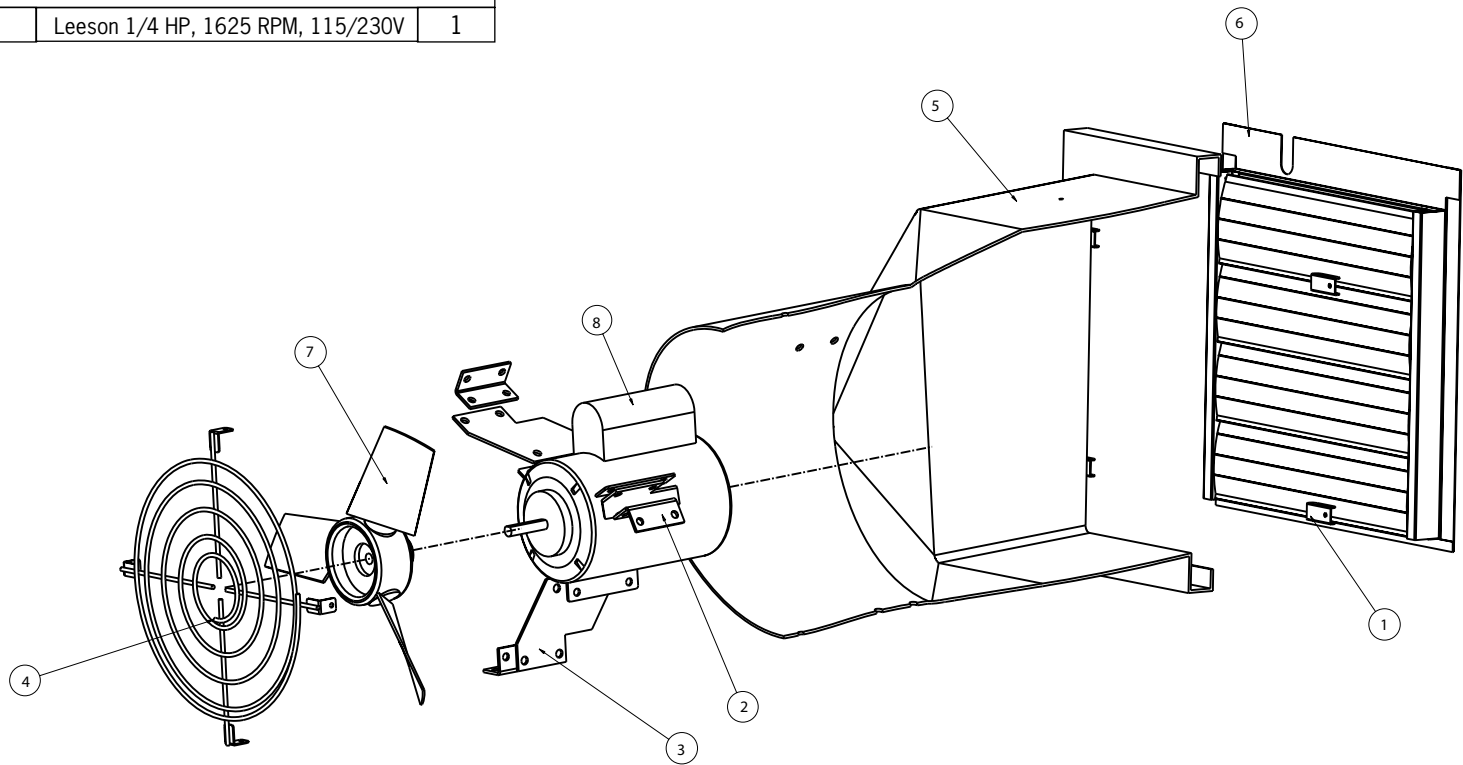
**Note:** Remove belt before making adjustments.



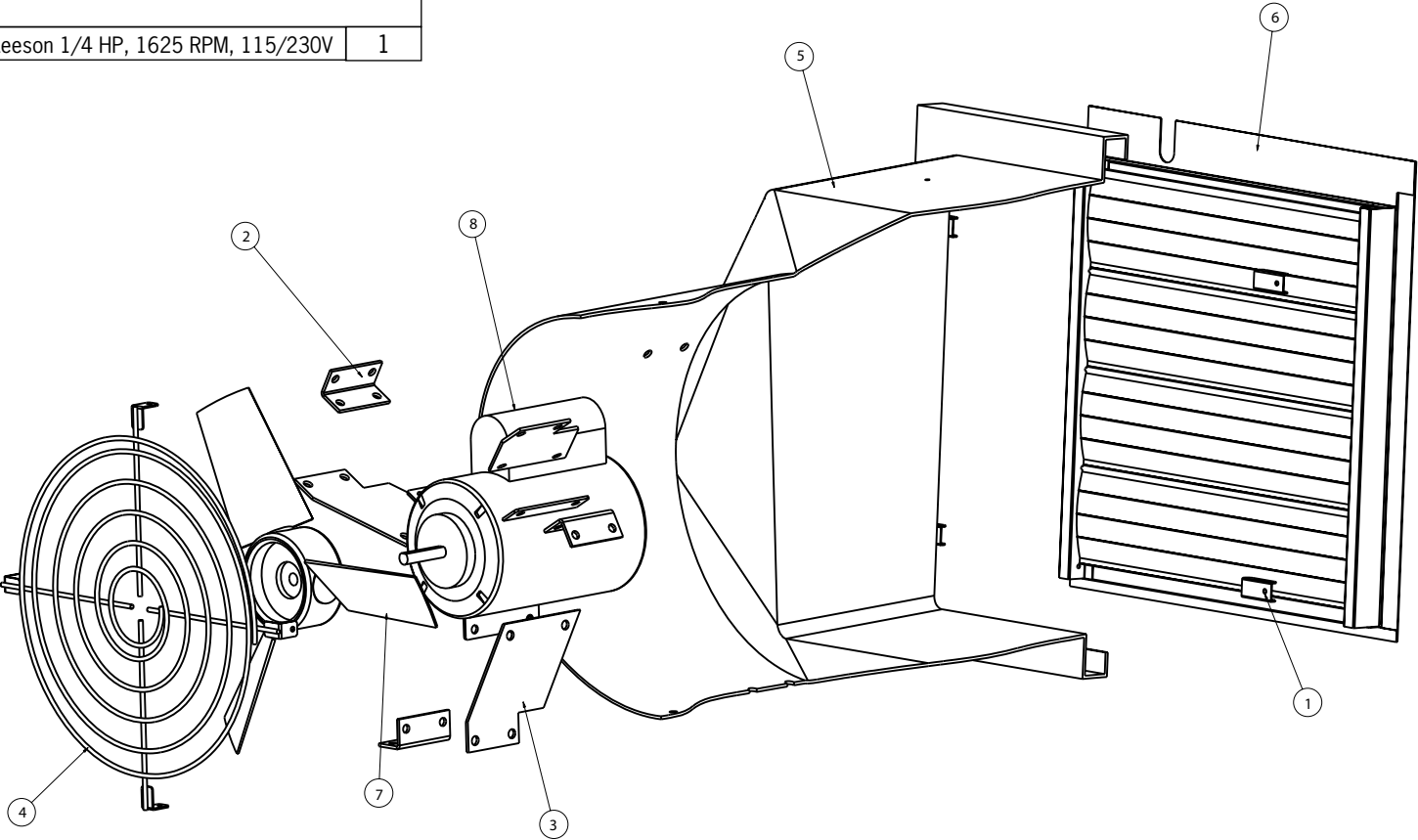
**CANARM LTD.**  
2157 PARKEDALE AVENUE  
BROCKVILLE, ONTARIO K6V 5V6  
TELEPHONE: (613) 342-5424  
FAX: 1-800-263-4598  
E-MAIL: agsales@canarm.ca

**CANARM LTEE.**  
8500 RUE GRENACHE  
ANJOU, QUEBEC H1J 2B1  
TELEPHONE: (514) 353-2255  
FAX: (514) 353-2522  
E-MAIL: agsales@canarm.ca

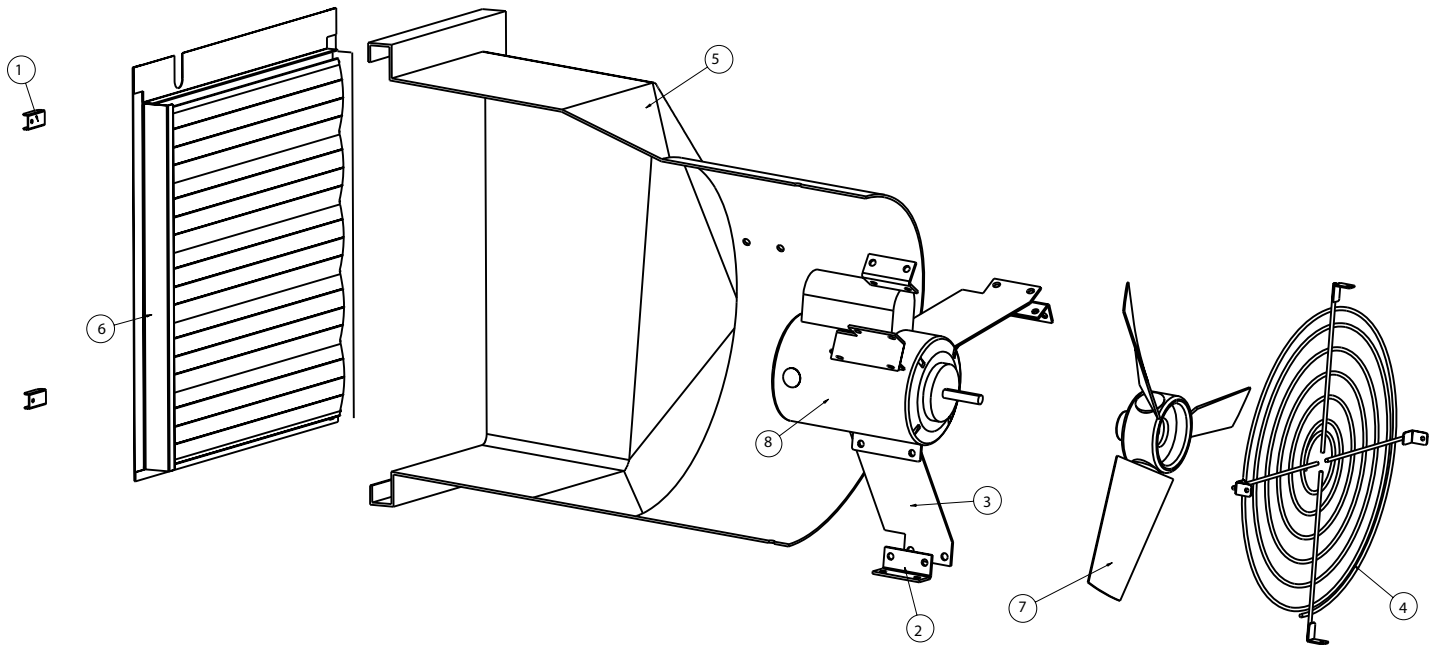
| 14" Direct Drive |           |                                      |      |
|------------------|-----------|--------------------------------------|------|
| No.              | Component | Description                          | Qty. |
| 1                | G1028     | Turn Clip                            | 4    |
| 2                | G1050     | PLF Mount Arm Link Bracket           | 3    |
| 3                | G1051-14  | PLF Motor Arm                        | 3    |
| 4                | G1910-14  | 14" Fan Guard                        | 1    |
| 5                | G2809-14B | PLF Housing                          | 1    |
| 6                | G2900-14  | 14" Shutter Assembly                 | 1    |
| 7                | G2950-14  | 14" 3/45 Rotair Blade                | 1    |
| PLF 14-EVD       |           |                                      |      |
| 8                | P1164-E   | 1/4 HP, 1625 RPM, 115/230V, 3.6/1.8A | 1    |
| PLF 14-EVDL      |           |                                      |      |
| 8                | P1168-E3  | 1/4 HP, 1625 RPM, 115/230V           | 1    |
| PLF 14-EURO      |           |                                      |      |
| 8                | P1155-E   | Leeson 1/4 HP, 1625 RPM, 115/230V    | 1    |



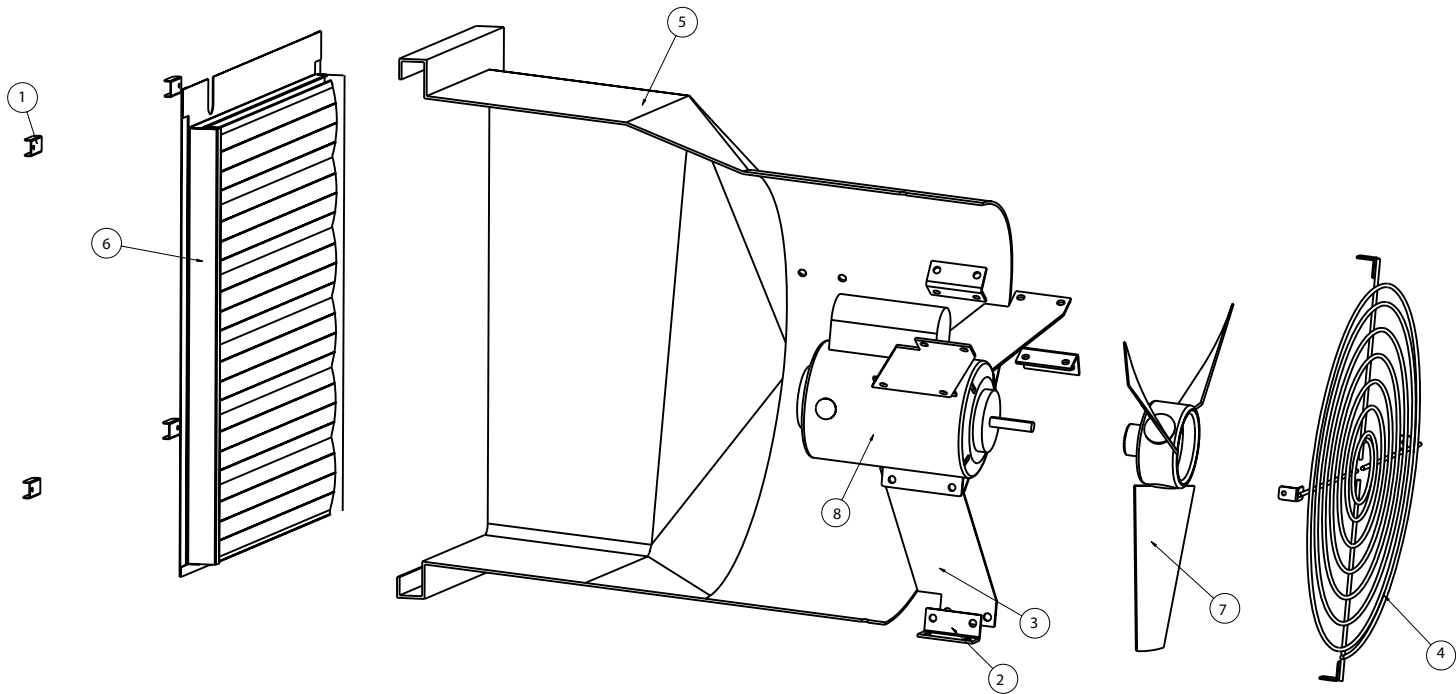
| 16" Direct Drive |           |                                   |      |
|------------------|-----------|-----------------------------------|------|
| No.              | Component | Description                       | Qty. |
| 1                | G1028     | Turn Clip                         | 4    |
| 2                | G1050     | PLF Mount Arm Link Bracket        | 3    |
| 3                | G1051-16  | PLF Motor Arm                     | 3    |
| 4                | G1910-16  | 16" Fan Guard                     | 1    |
| 5                | G2809-16B | PLF Housing                       | 1    |
| 6                | G2900-16  | 16" Shutter Assembly              | 1    |
| 7                | G2950-16  | 16" 3/45 Rotair Blade             | 1    |
| PLF 16-EVD       |           |                                   |      |
| 8                | P1164-E3  | 1/4 HP, Max.1625 RPM, 115/230V    | 1    |
| PLF 16-EVDL      |           |                                   |      |
| 8                | P1168-E   | 1/4 HP, 1625 RPM, 115/230V        | 1    |
| PLF 16-EURO      |           |                                   |      |
| 8                | P1155-E   | Leeson 1/4 HP, 1625 RPM, 115/230V | 1    |



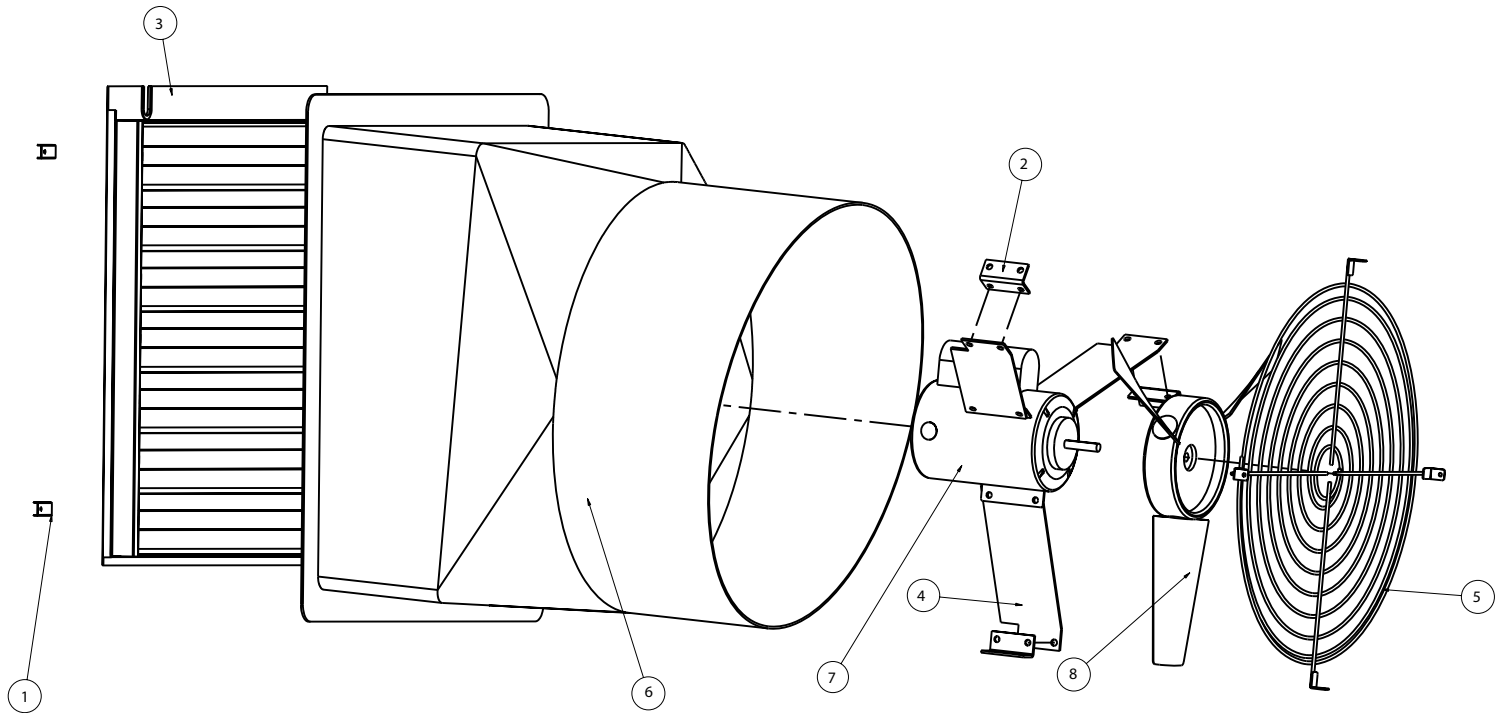
| 18" Direct Drive |           |                                          |      |
|------------------|-----------|------------------------------------------|------|
| No.              | Component | Description                              | Qty. |
| 1                | G1028     | Turn Clip                                | 4    |
| 2                | G1050     | PLF Mount Arm Link Bracket               | 3    |
| 3                | G1051-18  | PLF Motor Arm                            | 3    |
| 4                | G1910-18  | 18" Fan Guard                            | 1    |
| 5                | G2809-18B | PLF Housing                              | 1    |
| 6                | G2900-18  | 18" Shutter Assembly                     | 1    |
| 7                | G2950-18  | 18" 3/4 Rotair Blade                     | 1    |
| PLF 18-FVD       |           |                                          |      |
| 8                | P1164-F3  | 1/3 HP, Max.1625 RPM, 115/230V, 3.6/1.8A | 1    |
| PLF 18-FVDL      |           |                                          |      |
| 8                | P1168-F   | 1/3 HP, 1625 RPM, 115/230V               | 1    |
| PLF 18-EURO      |           |                                          |      |
| 8                | P1155-F   | Leeson 1/3 HP, 1625 RPM, 115/230V        | 1    |



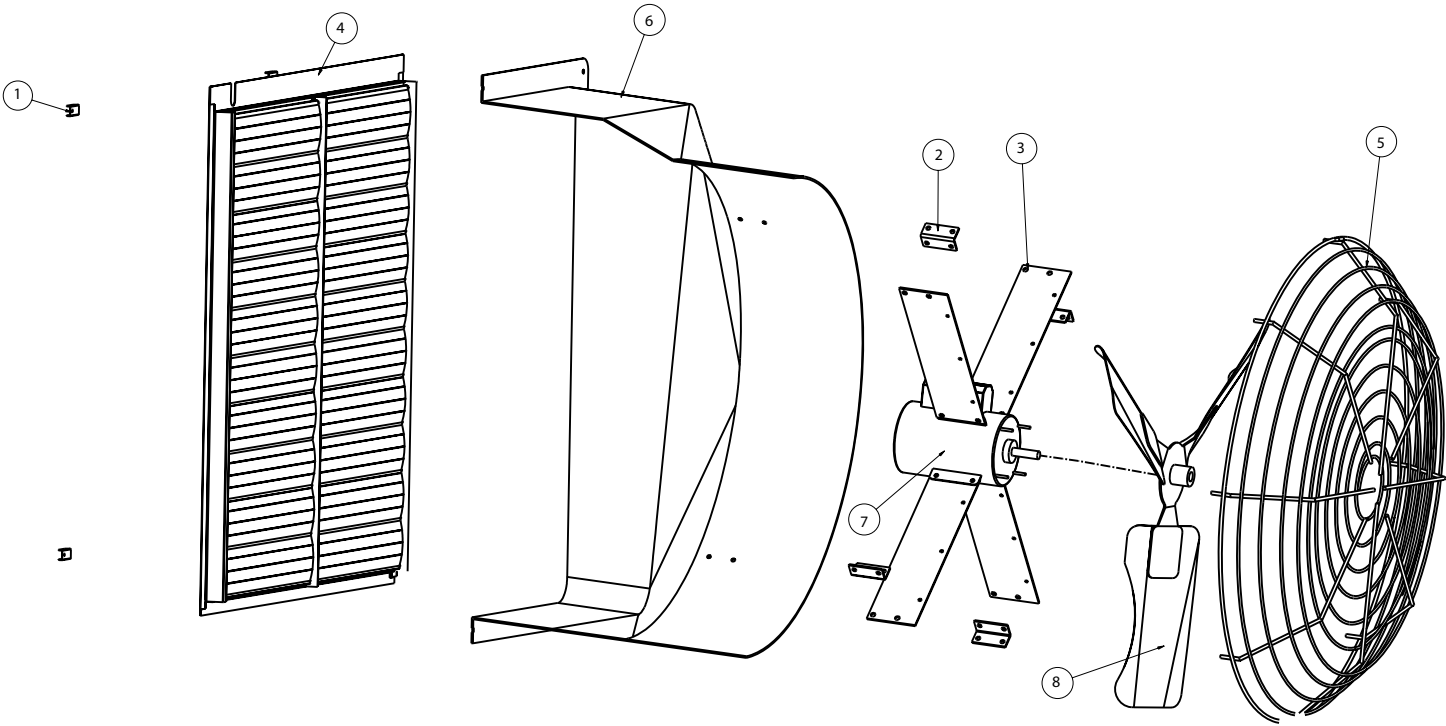
| 20" Direct Drive |           |                                          |      |
|------------------|-----------|------------------------------------------|------|
| No.              | Component | Description                              | Qty. |
| 1                | G1028     | Turn Clip                                | 4    |
| 2                | G1050     | PLF Mount Arm Link Bracket               | 3    |
| 3                | G1051-20  | PLF Motor Arm                            | 3    |
| 4                | G1910-20  | 20" Fan Guard                            | 1    |
| 5                | G2809-20B | PLF Housing                              | 1    |
| 6                | G2900-20  | 20" Shutter Assembly                     | 1    |
| 7                | G2950-20  | 20" 3/45 Rotair Blade                    | 1    |
| PLF 20-FVD       |           |                                          |      |
| 8                | P1164-F3  | 1/3 HP, Max.1625 RPM, 115/230V, 3.6/1.8A | 1    |
| PLF 20-FVDL      |           |                                          |      |
| 8                | P1168-F   | 1/3 HP, 1625 RPM, 115/230V               | 1    |
| PLF 20-EURO      |           |                                          |      |
| 8                | P1155-F   | Leeson 1/3 HP, 1625 RPM, 115/230V        | 1    |



| 24" Direct Drive |             |                                   |      |
|------------------|-------------|-----------------------------------|------|
| No.              | Component   | Description                       | Qty. |
| 1                | G1028       | Turn Clip                         | 4    |
| 2                | G1050       | PLF Mount Arm Link Bracket        | 3    |
| 3                | G2983       | 24" Shutter Assembly              | 1    |
| 4                | G1051-24    | PLF Motor Arm                     | 3    |
| 5                | G1910-24    | 24" Spiral Guard                  | 1    |
| 6                | G2809-24B   | PLF Housing                       | 1    |
| PLF 24-M         |             |                                   |      |
| 7                | P1166-F3    | 1/3 HP, 1100 RPM, 115/230V        | 1    |
| 8                | G2950-24M   | Rotair Blade 24"/6/45             | 1    |
| PLF 24-GVD       |             |                                   |      |
| 7                | P1168-G     | 1/2 HP, 1625 RPM, 115/230V        | 1    |
| 8                | G2948-24338 | Rotair Blade 24"/6/38             | 1    |
| PLF 24-GVDL      |             |                                   |      |
| 7                | P1168-G     | 1/2 HP, 1625 RPM, 115/230V        | 1    |
| 8                | G2948-24338 | Rotair Blade 24"/6/38             | 1    |
| PLF 24-EURO      |             |                                   |      |
| 7                | P1155-G     | Leeson 1/4 HP, 1625 RPM, 115/230V | 1    |
| 8                | G2948-24338 | Rotair Blade 24"/6/38             | 1    |



| 36" Direct Drive |            |                              |      |
|------------------|------------|------------------------------|------|
| No.              | Component  | Description                  | Qty. |
| 1                | G1028      | Turn Clip                    | 4    |
| 2                | G1050      | PLF Mount Arm Link Bracket   | 4    |
| 3                | G1051-36   | PLF Motor Arm                | 4    |
| 4                | G1658-36GV | 36" Galv. Shutter Assembly   | 1    |
| 5                | G1900-36   | PLF36 Spiral Guard           | 1    |
| 6                | G2809-36B  | PLF Housing                  | 1    |
| 7                | P1170-36DP | 1/2 HP, 825 RPM, 4 Lug Mount | 1    |
| PLF 36-M         |            |                              |      |
| 8                | P3006-36D  | 36" S.S. Blade 3/25          | 1    |
| PLF 36-MP        |            |                              |      |
| 8                | P3005-36D  | 36" Galv. Blade 3/25         | 1    |
| PLF 36-MPVS      |            |                              |      |
| 8                | P3005-36DV | 36" Galv. Blade 3/19         | 1    |



| 36" Belt Drive |             |                                     |      |
|----------------|-------------|-------------------------------------|------|
| No.            | Component   | Description                         | Qty. |
| 1              | P1174-48BGE | 1 HP, 1725 RPM, 115V, Reversible    | 1    |
| 2              | G1028       | Turn Clip                           | 4    |
| 3              | G1883       | Motor Mount Bracket                 | 1    |
| 4              | G1885       | 1 x 14.125 B.D. Shaft - 6 Lug Mount | 1    |
| 5              | G1939       | Rotary Tensioner Mount Bracket      | 1    |
| 6              | G1658-36V   | 36 GV. Shutter Assembly             | 1    |
| 7              | G1896-GV-3  | Bearing Mount Case                  | 1    |
| 8              | G1900-36    | PLF Guard                           | 1    |
| 9              | G2458-36    | Motor Mount Arm                     | 6    |
| 10             | G2809-36B   | PLF Housing                         | 1    |
| 11             | P2020-45    | Motor Pulley                        | 1    |
| 12             | P3030-36B   | 36" BD Blade 4/43, Galv             | 1    |
| 13             | P9600       | Rotary Tensioner                    | 1    |
| 14             | P2002-216   | Bearing - 2 Bolt Flange Mount       | 1    |
| 15             | P2010-9     | 9" Pulley                           | 1    |
| 16             | P2034-AX38  | Cogged V-Belt AX 38                 | 1    |

